

**TMC Pooled-Fund Study
Project Proposal Form**

Project Category*: Performance Monitoring and Evaluation	Project Number: 4
Project Title: Freeway System Performance Monitoring and Reporting	
Statement of Problem: To effectively manage and operate a freeway, an accurate minute-by-minute monitoring of the facility's performance is necessary. Monitoring the operation or performance of a freeway is critical for both the agency responsible for managing the facility and for the facility's users. Performance monitoring is used to assess existing conditions for short-term non-recurring events, for long-term recurring events. The assessments guide the development and implementation of operational plans, and may be used to inform freeway users of existing and predicted near-term conditions. The freeway manager also uses the results of the performance monitoring to identify deficiencies in the physical freeway system, and to provide input to the planning and design of future improvements to the facility. The demand for performance measures in transportation planning and decision-making processes of public agencies has increased significantly. This demand has lead to the need for information and guidance on how to integrate freeway performance into planning and decision-making. There is general agreement among transportation practitioners that freeway system performance monitoring, evaluation, and reporting should be continuously performed and supported by operating agencies. A consensus does not exist, and technical guidance has not been developed, regarding the appropriate measures, methods, data requirements, evaluation tools, procedures, level of effort, and resources required to properly support the monitoring, evaluation, and reporting of freeway performance. Research and technical guidance is needed to provide direction and to ensure that transportation professionals are effectively integrating the performance of freeways into the planning and decision-making processes of agencies.	

* (1) System Planning & Program Issues; (2) Operational Policies, Strategies, and Plans; (3) System Design & Implementation; (4) Performance Monitoring & Evaluation; (5) Staffing and Training Issues; (6) System Maintenance Concept & Plans; (7) MC Technology Transfer & Outreach:

Suggested Approach:

The objective of this research is to develop a framework and recommend procedures for public agencies to use in the monitoring, evaluation, and reporting of freeway performance. The research is intended to provide transportation organizations and practitioners with the direction, guidance, and a technical basis for integration the consideration of freeway facilities performance into the appropriate planning and decision-making processes of an agency. This guidance is expected to support the consideration of freeway performance in strategic planning, program planning, facility and system design, travel management, and traffic control.

The technical report generated by this project will bring together the experiences and lessons learned from different agencies and will be based on different applications and approaches that vary in degree of complexity. The technical report should provide a resource and basis for practitioners to apply the theories, concepts, procedures, and analysis tools for the applications that are currently employed for establishing or integrating freeway performance measures into transportation planning and decision-making. This project will include the following tasks:

1. Review and synthesis of lessons learned and current practices of different public agencies. This review should include an in-depth review of the practices of several leading agencies that have mature freeway performance monitoring, management, and operating systems. The synthesis will identify future capabilities of these systems, and current gaps in practice.
2. Identify the components, support services, and resources required for an ongoing performance monitoring, evaluation, and reporting program.
3. Develop a family of matrices for performance measures and corresponding data elements to support the consideration of freeway performance in a wide range of agency planning and decision-making applications that may include:
 - Strategic planning, evaluation, and investment (e.g., regional transportation plans, capital improvement programming);
 - Planning (e.g., corridor studies, feasibility studies and improvement alternatives);
 - Programs and provision of services;
 - Managing travel and controlling traffic (e.g., freeway management system functions, ramp metering, lane control)
4. Identify the potential dimensions and criteria (e.g., measurability, reliability, temporal, geographical, feasibility, etc.) to consider with selecting freeway related performance measures;
5. Identify the recommended methodologies, procedures, tools, and level of effort appropriate to support the integration of freeway performance in the range of potential planning and decision-making applications;
6. Identify a continuous process improvement (e.g., planning, system engineering process) framework within which the theory and methods of performance monitoring, evaluation, and reporting may be appropriate to apply.
7. Identify the issues to consider related to the continuous monitoring, evaluation, and reporting of freeway performance. Issues may include:
 - Quantity of information and format suitable for different audiences;
 - Frequency and methods of reporting performance; and
 - Techniques to automate the collection, processing, and reporting of data.
8. Identify further research, training, or technology transfer initiatives that are need to facilitate the successful transfer and incorporation of these practices by operating agencies.

Products:	
Manual on Freeway Management System Performance Measurement	
End Users (Product Customer):	
Training, Outreach, and Distribution Plan:	
Rough Order of Magnitude Cost: Person Hours: _____ Labor Cost: _____ Direct Costs: _____ Total Cost: \$300,000	Comments:
In-Kind Support or Other Funding (Beyond SP&R):	
Suggested Schedule for Major Milestones:	
18 months	
Benefits This project will engage transportation professionals to identify the value, benefits, lessons learned, and recommended practices related to monitoring, evaluating, and reporting the performance of freeway facilities, freeway management systems, and freeway management or operational strategies. The project will result in the preparation of a product that will: <ul style="list-style-type: none"> • Identify recommended methods, procedures, tools, and level of effort appropriate to monitor, evaluate, and report on freeway facility performance. • Improve the efficiency of freeway facility investments through application of the recommended methods, procedures, and tools. • Effectively increase freeway capacity through the improvements in investment efficiency. • Profile successful practices of agencies. • Identify additional information or initiatives (e.g., further research, training, or technology development) needed to facilitate the successful transfer and incorporation of these practices by State and local agencies. 	